

SEQUENCE LISTING

<110> Merck & Co., Inc.
Istituto Di Ricerche Di Biologia Molecolare P. Angeletti S.P.A.

<120> INHIBITORS OF CORONAVIRUS

<130> 21640Y

<150> 60/479430
<151> 2003-06-18

<150> 60/479429
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<150> 60/478860
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<150> 60/467190
<151> 2003-04-30

<150> 60/463100
<151> 2003-04-14

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<170> FastSEQ for Windows Version 4.0

<210> 1
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<213> SARS-CoV

<400> 1
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1 5 10 15
Asp Arg Cys Thr Phe Asp Asp Val Gln Ala Pro Asn Tyr Thr Gln
20 25 30
His Thr Ser Ser Met Arg Gly Val Tyr Tyr Pro Asp Glu Ile Phe Arg
35 40 45
Ser Asp Thr Leu Tyr Leu Thr Gln Asp Leu Phe Leu Pro Phe Tyr Ser
50 55 60
Asn Val Thr Gly Phe His Thr Ile Asn His Thr Phe Gly Asn Pro Val
65 70 75 80
Ile Pro Phe Lys Asp Gly Ile Tyr Phe Ala Ala Thr Glu Lys Ser Asn
85 90 95
Val Val Arg Gly Trp Val Phe Gly Ser Thr Met Asn Asn Lys Ser Gln
100 105 110
Ser Val Ile Ile Ile Asn Asn Ser Thr Asn Val Val Ile Arg Ala Cys
115 120 125
Asn Phe Glu Leu Cys Asp Asn Pro Phe Phe Ala Val Ser Lys Pro Met
130 135 140
Gly Thr Gln Thr His Thr Met Ile Phe Asp Asn Ala Phe Asn Cys Thr
145 150 155 160
Phe Glu Tyr Ile Ser Asp Ala Phe Ser Leu Asp Val Ser Glu Lys Ser
165 170 175
Gly Asn Phe Lys His Leu Arg Glu Phe Val Phe Lys Asn Lys Asp Gly
180 185 190
Phe Leu Tyr Val Tyr Lys Gly Tyr Gln Pro Ile Asp Val Val Arg Asp
195 200 205

Leu	Pro	Ser	Gly	Phe	Asn	Thr	Leu	Lys	Pro	Ile	Phe	Lys	Leu	Pro	Leu
	210					215					220				
Gly	Ile	Asn	Ile	Thr	Asn	Phe	Arg	Ala	Ile	Leu	Thr	Ala	Phe	Ser	Pro
225					230					235					240
Ala	Gln	Asp	Ile	Trp	Gly	Thr	Ser	Ala	Ala	Tyr	Phe	Val	Gly	Thr	Tyr
				245					250				255		
Leu	Lys	Pro	Thr	Thr	Phe	Met	Leu	Lys	Tyr	Asp	Glu	Asn	Gly	Thr	Ile
			260					265					270		
Thr	Asp	Ala	Val	Asp	Cys	Ser	Gln	Asn	Pro	Leu	Ala	Glu	Leu	Lys	Cys
		275					280					285			
Ser	Val	Lys	Ser	Phe	Glu	Ile	Asp	Lys	Gly	Ile	Tyr	Gln	Thr	Ser	Asn
	290					295					300				
Phe	Arg	Val	Val	Pro	Ser	Gly	Asp	Val	Val	Arg	Phe	Pro	Asn	Ile	Thr
305					310					315					320
Asn	Leu	Cys	Pro	Phe	Gly	Glu	Val	Phe	Asn	Ala	Thr	Lys	Phe	Pro	Ser
				325					330					335	
Val	Tyr	Ala	Trp	Glu	Arg	Lys	Lys	Ile	Ser	Asn	Cys	Val	Ala	Asp	Tyr
			340					345					350		
Ser	Val	Leu	Tyr	Asn	Ser	Thr	Phe	Phe	Ser	Thr	Phe	Lys	Cys	Tyr	Gly
		355					360					365			
Val	Ser	Ala	Thr	Lys	Leu	Asn	Asp	Leu	Cys	Phe	Ser	Asn	Val	Tyr	Ala
	370					375					380				
Asp	Ser	Phe	Val	Val	Lys	Gly	Asp	Asp	Val	Arg	Gln	Ile	Ala	Pro	Gly
385					390					395					400
Gln	Thr	Gly	Val	Ile	Ala	Asp	Tyr	Asn	Tyr	Lys	Leu	Pro	Asp	Asp	Phe
			405						410					415	
Met	Gly	Cys	Val	Leu	Ala	Trp	Asn	Thr	Arg	Asn	Ile	Asp	Ala	Thr	Ser
			420					425					430		
Thr	Gly	Asn	Tyr	Asn	Tyr	Lys	Tyr	Arg	Tyr	Leu	Arg	His	Gly	Lys	Leu
		435					440					445			
Arg	Pro	Phe	Glu	Arg	Asp	Ile	Ser	Asn	Val	Pro	Phe	Ser	Pro	Asp	Gly
	450					455					460				
Lys	Pro	Cys	Thr	Pro	Pro	Ala	Leu	Asn	Cys	Tyr	Trp	Pro	Leu	Asn	Asp
465					470					475					480
Tyr	Gly	Phe	Tyr	Thr	Thr	Thr	Gly	Ile	Gly	Tyr	Gln	Pro	Tyr	Arg	Val
			485						490					495	
Val	Val	Leu	Ser	Phe	Glu	Leu	Leu	Asn	Ala	Pro	Ala	Thr	Val	Cys	Gly
			500					505					510		
Pro	Lys	Leu	Ser	Thr	Asp	Leu	Ile	Lys	Asn	Gln	Cys	Val	Asn	Phe	Asn
		515					520					525			
Phe	Asn	Gly	Leu	Thr	Gly	Thr	Gly	Val	Leu	Thr	Pro	Ser	Ser	Lys	Arg
	530					535					540				
Phe	Gln	Pro	Phe	Gln	Gln	Phe	Gly	Arg	Asp	Val	Ser	Asp	Phe	Thr	Asp
545				550					555						560
Ser	Val	Arg	Asp	Pro	Lys	Thr	Ser	Glu	Ile	Leu	Asp	Ile	Ser	Pro	Cys
			565					570						575	
Ala	Phe	Gly	Gly	Val	Ser	Val	Ile	Thr	Pro	Gly	Thr	Asn	Ala	Ser	Ser
			580					585					590		
Glu	Val	Ala	Val	Leu	Tyr	Gln	Asp	Val	Asn	Cys	Thr	Asp	Val	Ser	Thr
		595					600					605			
Ala	Ile	His	Ala	Asp	Gln	Leu	Thr	Pro	Ala	Trp	Arg	Ile	Tyr	Ser	Thr
	610					615					620				
Gly	Asn	Asn	Val	Phe	Gln	Thr	Gln	Ala	Gly	Cys	Leu	Ile	Gly	Ala	Glu
625				630					635						640
His	Val	Asp	Thr	Ser	Tyr	Glu	Cys	Asp	Ile	Pro	Ile	Gly	Ala	Gly	Ile
			645						650					655	
Cys	Ala	Ser	Tyr	His	Thr	Val	Ser	Leu	Leu	Arg	Ser	Thr	Ser	Gln	Lys
		660						665					670		
Ser	Ile	Val	Ala	Tyr	Thr	Met	Ser	Leu	Gly	Ala	Asp	Ser	Ser	Ile	Ala
	675						680					685			
Tyr	Ser	Asn	Asn	Thr	Ile	Ala	Ile	Pro	Thr	Asn	Phe	Ser	Ile	Ser	Ile
	690					695					700				

Thr	Thr	Glu	Val	Met	Pro	Val	Ser	Met	Ala	Lys	Thr	Ser	Val	Asp	Cys	705	710	715	720
Asn	Met	Tyr	Ile	Cys	Gly	Asp	Ser	Thr	Glu	Cys	Ala	Asn	Leu	Leu	Leu	725	730	735	740
Gln	Tyr	Gly	Ser	Phe	Cys	Thr	Gln	Leu	Asn	Arg	Ala	Leu	Ser	Gly	Ile	740	745	750	755
Ala	Ala	Glu	Gln	Asp	Arg	Asn	Thr	Arg	Glu	Val	Phe	Ala	Gln	Val	Lys	755	760	765	770
Gln	Met	Tyr	Lys	Thr	Pro	Thr	Leu	Lys	Tyr	Phe	Gly	Gly	Phe	Asn	Phe	770	775	780	785
Ser	Gln	Ile	Leu	Pro	Asp	Pro	Leu	Lys	Pro	Thr	Lys	Arg	Ser	Phe	Ile	790	795	800	805
Glu	Asp	Leu	Leu	Phe	Asn	Lys	Val	Thr	Leu	Ala	Asp	Ala	Gly	Phe	Met	810	815	820	825
Lys	Gln	Tyr	Gly	Glu	Cys	Leu	Gly	Asp	Ile	Asn	Ala	Arg	Asp	Leu	Ile	830	835	840	845
Cys	Ala	Gln	Lys	Phe	Asn	Gly	Leu	Thr	Val	Leu	Pro	Pro	Leu	Leu	Thr	850	855	860	865
Asp	Asp	Met	Ile	Ala	Ala	Tyr	Thr	Ala	Ala	Leu	Val	Ser	Gly	Thr	Ala	870	875	880	885
Thr	Ala	Gly	Trp	Thr	Phe	Gly	Ala	Gly	Ala	Ala	Leu	Gln	Ile	Pro	Phe	890	895	900	905
Ala	Met	Gln	Met	Ala	Tyr	Arg	Phe	Asn	Gly	Ile	Gly	Val	Thr	Gln	Asn	910	915	920	925
Val	Leu	Tyr	Glu	Asn	Gln	Lys	Gln	Ile	Ala	Asn	Gln	Phe	Asn	Lys	Ala	930	935	940	945
Ile	Ser	Gln	Ile	Gln	Glu	Ser	Leu	Thr	Thr	Thr	Ser	Thr	Ala	Leu	Gly	950	955	960	965
Lys	Leu	Gln	Asp	Val	Val	Asn	Gln	Asn	Ala	Gln	Ala	Leu	Asn	Thr	Leu	970	975	980	985
Val	Lys	Gln	Leu	Ser	Ser	Asn	Phe	Gly	Ala	Ile	Ser	Ser	Val	Leu	Asn	990	995	1000	1005
Asp	Ile	Leu	Ser	Arg	Leu	Asp	Lys	Val	Glu	Ala	Glu	Val	Gln	Ile	Asp	1010	1015	1020	1025
Arg	Leu	Ile	Thr	Gly	Arg	Leu	Gln	Ser	Leu	Gln	Thr	Tyr	Val	Thr	Gln	1030	1035	1040	1045
Gln	Leu	Ile	Arg	Ala	Ala	Glu	Ile	Arg	Ala	Ser	Ala	Asn	Leu	Ala	Ala	1050	1055	1060	1065
Thr	Lys	Met	Ser	Glu	Cys	Val	Leu	Gly	Gln	Ser	Lys	Arg	Val	Asp	Phe	1070	1075	1080	1085
Cys	Gly	Lys	Gly	Tyr	His	Leu	Met	Ser	Phe	Pro	Gln	Ala	Ala	Pro	His	1090	1095	1100	1105
Gly	Val	Val	Phe	Leu	His	Val	Thr	Tyr	Val	Pro	Ser	Gln	Glu	Arg	Asn	1110	1115	1120	1125
Phe	Thr	Thr	Ala	Pro	Ala	Ile	Cys	His	Glu	Gly	Lys	Ala	Tyr	Phe	Pro	1130	1135	1140	1145
Arg	Glu	Gly	Val	Phe	Val	Phe	Asn	Gly	Thr	Ser	Trp	Phe	Ile	Thr	Gln	1150	1155	1160	1165
Arg	Asn	Phe	Phe	Ser	Pro	Gln	Ile	Ile	Thr	Thr	Asp	Asn	Thr	Phe	Val	1170	1175	1180	1185
Ser	Gly	Asn	Cys	Asp	Val	Val	Ile	Gly	Ile	Ile	Asn	Asn	Thr	Val	Tyr	1190	1195	1200	
Asp	Pro	Leu	Gln	Pro	Glu	Leu	Asp	Ser	Phe	Lys	Glu	Glu	Leu	Asp	Lys				
Tyr	Phe	Lys	Asn	His	Thr	Ser	Pro	Asp	Val	Asp	Leu	Gly	Asp	Ile	Ser				
Gly	Ile	Asn	Ala	Ser	Val	Val	Asn	Ile	Gln	Lys	Glu	Ile	Asp	Arg	Leu				
Asn	Glu	Val	Ala	Lys	Asn	Leu	Asn	Glu	Ser	Leu	Ile	Asp	Leu	Gln	Glu				
Leu	Gly	Lys	Tyr	Glu	Gln	Tyr	Ile	Lys	Trp	Pro	Trp	Tyr	Val	Trp	Leu				

Gly Phe Ile Ala Gly Leu Ile Ala Ile Val Met Val Thr Ile Leu Leu
 1205 1210 1215
 Cys Cys Met Thr Ser Cys Cys Ser Cys Leu Lys Gly Ala Cys Ser Cys
 1220 1225 1230
 Gly Ser Cys Cys Lys Phe Asp Glu Asp Asp Ser Glu Pro Val Leu Lys
 1235 1240 1245
 Gly Val Lys Leu His Tyr Thr
 1250 1255

<210> 2
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 <213> SRS-CoV

<400> 2
 Pro Asp Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val
 1 5 10 15
 Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu
 20 25 30
 Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys Tyr Glu Gln Tyr
 35 40 45
 Ile Lys Trp Trp Pro Trp Tyr Val Trp Leu
 50 55

<210> 3
 <211> 35
 <212> PRT
 <213> SARS-CoV

<400> 3
 Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys
 1 5 10 15
 Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu
 20 25 30
 Ile Asp Leu
 35

<210> 4
 <211> 35
 <212> PRT
 <213> SARS-CoV

<400> 4
 Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp
 1 5 10 15
 Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu
 20 25 30
 Gln Glu Leu
 35

<210> 5
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 <213> Yeast

<400> 5
 Arg Met Lys Gln Leu Glu Asp Lys Val Glu Glu Leu Leu Ser Lys Asn
 1 5 10 15

Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu Val Gly Glu
 20 25 30
 Arg

<210> 6
 <211> 36
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Chimeric sequence of SARS-CoV sequence and yeast
 sequence

<221> ACETYLTATION
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<221> AMIDATION
 <222> 36

<400> 6
 Cys Gly Gly Ile Met Lys Ile Asn Glu Asp Val Val Glu Ile Gln Leu
 1 5 10 15
 Ser Ile Asn Tyr Leu Asn Glu Asn Ala Val Ala Leu Asn Lys Lys Leu
 20 25 30
 Val Gly Leu Gln
 35

<210> 7
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<220>
 <223> Modified yeast sequence

<221> ACETYLTATION
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<400> 7
 Cys Gly Gly Arg Met Lys Gln Leu Glu Asp Lys Val Glu Glu Leu Leu
 1 5 10 15
 Ser Lys Asn Tyr His Leu Glu Asn Glu Val Ala Arg Leu Lys Lys Leu
 20 25 30
 Val Gly Glu Arg
 35

<210> 8
 <211> 39
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<220>
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<400> 8
 Cys Cys Gly Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val
 1 5 10 15

Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser
 20 25 30
 Ser Asn Phe Gly Ala Ile Ser
 35

<210> 9
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified SARS-CoV sequence

<400> 9
 Cys Cys Gly Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala
 1 5 10 15
 Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
 20 25 30

<210> 10
 <211> 41
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified SARS-CoV sequence

<400> 10
 Cys Cys Gly Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Ser Asn Phe
 1 5 10 15
 Gly Ala Ile Ser Ser Val Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys
 20 25 30
 Val Glu Ala Glu Val Gln Ile Asp Arg
 35 40

<210> 11
 <211> 33
 <212> PRT
 <213> Yeast

<400> 11
 Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Leu Ser Lys Gln
 1 5 10 15
 Tyr His Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Ile Gly Glu
 20 25 30
 Arg

<210> 12
 <211> 34
 <212> PRT
 <213> Yeast

<400> 12
 Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys Gln
 1 5 10 15
 Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Ile Gly Glu
 20 25 30

Arg Tyr

<210> 13
 <211> 15
 <212> PRT
 <213> Yeast

<400> 13
 Lys Ile Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu
 1 5 10 15

<210> 14
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<220>
 <223> derivative of Leucine zipper sequence

<221> ACETYLTATION
 <222> 1

<221> AMIDATION
 <222> 31

<400> 14
 Tyr Gly Gly Ile Glu Lys Lys Ile Glu Ala Ile Glu Lys Lys Ile Glu
 1 5 10 15
 Ala Ile Glu Lys Lys Ile Glu Ala Ile Glu Lys Lys Ile Glu Ala
 20 25 30

<210> 15
 <211> 31
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<220>
 <223> derivative of isoleucine zipper sequence

<221> ACETYLTATION
 <222> 1

<221> AMIDATION
 <222> 31

<400> 15
 Tyr Gly Gly Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu
 1 5 10 15
 Ala Ile Lys Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Glu Ala
 20 25 30

<210> 16
 <211> 64
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Chimeric sequence including SARS-CoV sequence

<400> 16

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Thr Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile
 1           5           10           15
Lys Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Thr Thr Thr Ser Thr
          20           25           30
Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu
          35           40           45
Asn Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Gly
 50           55           60

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<210> 17

<211> 68

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence including SARS-CoV sequence

<400> 17

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Thr Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys
 1           5           10           15
Gln Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Ile Thr
          20           25           30
Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn
          35           40           45
Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly
 50           55           60
Ala Ile Ser Gly
65

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<210> 18

<211> 66

<212> PRT

<213> Artificial Sequence

<220>

<223> chimeric sequence

<400> 18

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Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys Gln
 1           5           10           15
Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Ile Ser Gln
          20           25           30
Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln
          35           40           45
Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln
 50           55           60
Leu Ser
65

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<210> 19

<211> 59

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence including SARS-CoV sequence

<400> 19

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Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys Gln
 1           5           10           15
Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Ile Glu Asn
           20           25           30
Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln
           35           40           45
Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
 50           55

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<210> 20

<211> 59

<212> PRT

<213> Artificial Sequence

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<223> Chimeric sequence containing SARS-CoV sequence

<400> 20

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Thr Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys
 1           5           10           15
Gln Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Leu Glu Asn
           20           25           30
Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln
           35           40           45
Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly
 50           55

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<210> 21

<211> 56

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence containing SARS-CoV sequence

<400> 21

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Thr Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile
 1           5           10           15
Lys Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Glu Asn Gln Lys Gln
           20           25           30
Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu
           35           40           45
Thr Thr Thr Ser Thr Ala Leu Gly
 50           55

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<210> 22

<211> 49

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence containing SARS-CoV sequence

<400> 22

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Thr Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile
 1           5           10           15

```

Lys Lys Lys Ile Glu Ala Ile Glu Lys Arg Leu Gln Ser Leu Gln Thr
 20 25 30
 Tyr Val Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala
 35 40 45
 Asn

<210> 23
 <211> 53
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 23
 Thr Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys
 1 5 10 15
 Gln Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Arg Leu Gln
 20 25 30
 Ser Leu Gln Thr Tyr Val Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile
 35 40 45
 Arg Ala Ser Ala Asn
 50

<210> 24
 <211> 67
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 24
 Thr Arg Met Lys Gln Ile Glu Asp Lys Ile Glu Glu Ile Glu Ser Lys
 1 5 10 15
 Gln Lys Lys Ile Glu Asn Glu Ile Ala Arg Ile Lys Lys Ala Leu Asn
 20 25 30
 Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val
 35 40 45
 Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln
 50 55 60
 Ile Asp Arg
 65

<210> 25
 <211> 63
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 25
 Thr Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile
 1 5 10 15
 Lys Lys Lys Ile Glu Ala Ile Glu Lys Ala Leu Asn Thr Leu Val Lys
 20 25 30

Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser Ser Val Leu Asn Asp Ile
 35 40 45
 Leu Ser Arg Leu Asp Lys Val Glu Ala Glu Val Gln Ile Asp Arg
 50 55 60

<210> 26
 <211> 62
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> chimeric sequence

<400> 26
 Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile Lys
 1 5 10 15
 Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Ser Gln Ile Gln Glu Ser
 20 25 30
 Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn
 35 40 45
 Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser
 50 55 60

<210> 27
 <211> 58
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> chimeric sequence

<400> 27
 Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile Lys
 1 5 10 15
 Lys Lys Ile Glu Ala Ile Asn Val Leu Tyr Glu Asn Gln Lys Gln Ile
 20 25 30
 Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr
 35 40 45
 Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln
 50 55

<210> 28
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 28
 Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile Lys
 1 5 10 15
 Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Glu Asn Gln Lys Gln Ile
 20 25 30
 Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr
 35 40 45
 Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn
 50 55 60

<210> 29
 <211> 62
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 29
 Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile Lys
 1 5 10 15
 Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Asn Gln Asn Ala Gln Ala
 20 25 30
 Leu Asn Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile Ser
 35 40 45
 Ser Val Leu Asn Asp Ile Leu Ser Arg Leu Asp Lys Val Glu
 50 55 60

<210> 30
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 <212> PRT
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<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 30
 Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile Lys
 1 5 10 15
 Lys Lys Ile Glu Ala Ile Glu Lys Ser Leu Thr Thr Thr Ser Thr Ala
 20 25 30
 Leu Gly Lys Leu Gln Asp Val Val Asn
 35 40

<210> 31
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 <213> Artificial Sequence

<220>
 <223> Chimeric sequence containing SARS-CoV sequence

<400> 31
 Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu Gln Glu Ala Ile Lys
 1 5 10 15
 Lys Lys Ile Glu Ala Ile Glu Lys Ala Ile Ser Ser Val Leu Asn Asp
 20 25 30
 Ile Leu Ser Arg Leu Asp Lys Val Glu
 35 40

<210> 32
 <211> 64
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> chimeric sequence

<400> 32

```

Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys
 1           5           10           15
Leu Gln Asp Val Val Asn Gln Asn Ala Gln Ala Leu Asn Thr Leu Val
           20           25           30
Lys Gln Leu Ser Ser Ile Lys Lys Glu Ile Glu Ala Ile Lys Lys Glu
           35           40           45
Gln Glu Ala Ile Lys Lys Lys Ile Glu Ala Ile Glu Lys Glu Ile Gly
           50           55           60

```

<210> 33

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> designed linker sequence

<400> 33

```

Gly Gly Gly Ser Ser Gly Gly Gly Ser Gly Gly
 1           5           10

```

<210> 34

<211> 290

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence containing SARS-CoV sequence

<400> 34

```

Met Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn Gln Phe Asn Lys
 1           5           10           15
Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr Ser Thr Ala Leu
           20           25           30
Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gly Gly Ser Ser
           35           40           45
Gly Gly Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val
           50           55           60
Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu
65           70           75           80
Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Gly Gly Ser Ser Gly
           85           90           95
Gly Gly Ser Gly Gly Val Leu Tyr Glu Asn Gln Lys Gln Ile Ala Asn
           100          105          110
Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu Thr Thr Thr
           115          120          125
Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gly
130          135          140
Gly Gly Ser Ser Gly Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn
145          150          155          160
Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val
           165          170          175
Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Gly
           180          185          190
Gly Ser Ser Gly Gly Gly Ser Gly Gly Val Leu Tyr Glu Asn Gln Lys
           195          200          205
Gln Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser
210          215          220

```

```

Leu Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn
225                230                235                240
Gln Asn Ala Gly Gly Gly Ser Ser Gly Gly Gly Ser Gly Gly Asp Ile
                245                250                255
Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg
                260                265                270
Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln
                275                280                285
Glu Leu
290

```

<210> 35

<211> 284

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence containing SARS-CoV sequence

<400> 35

```

Met Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn Ala Gln
1      5      10      15
Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly Ala Ile
20      25      30
Ser Ser Val Leu Asn Asp Ile Leu Ser Gly Gly Gly Ser Ser Gly Gly
35      40      45
Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile
50      55      60
Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu
65      70      75      80
Ser Leu Ile Asp Leu Gln Glu Leu Gly Gly Gly Ser Ser Gly Gly Gly
85      90      95
Ser Gly Gly Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln Asn
100     105     110
Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Ser Asn Phe Gly
115     120     125
Ala Ile Ser Ser Val Leu Asn Asp Ile Leu Ser Gly Gly Gly Ser Ser
130     135     140
Gly Gly Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val
145     150     155     160
Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu
165     170     175
Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Gly Gly Ser Ser Gly
180     185     190
Gly Gly Ser Gly Gly Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn
195     200     205
Gln Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Ser Asn
210     215     220
Phe Gly Ala Ile Ser Ser Val Leu Asn Asp Ile Leu Ser Gly Gly Gly
225     230     235     240
Ser Ser Gly Gly Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser
245     250     255
Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
260     265     270
Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu
275     280

```

<210> 36

<211> 284

<212> PRT

<213> Artificial Sequence

<220>

<223> Chimeric sequence containing SARS-CoV sequence

<400> 36

```

Met Gln Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu Gln Thr
 1           5           10           15
Tyr Val Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala Ser Ala
          20           25           30
Asn Leu Ala Ala Thr Lys Met Ser Gly Gly Gly Ser Ser Gly Gly
          35           40           45
Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile
          50           55           60
Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu
65           70           75           80
Ser Leu Ile Asp Leu Gln Glu Leu Gly Gly Gly Ser Ser Gly Gly Gly
          85           90           95
Ser Gly Gly Gln Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln Ser Leu
          100          105          110
Gln Thr Tyr Val Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile Arg Ala
          115          120          125
Ser Ala Asn Leu Ala Ala Thr Lys Met Ser Glu Gly Gly Ser Ser
          130          135          140
Gly Gly Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val
145          150          155          160
Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu
          165          170          175
Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Gly Gly Ser Ser Gly
          180          185          190
Gly Gly Ser Gly Gly Gln Ile Asp Arg Leu Ile Thr Gly Arg Leu Gln
          195          200          205
Ser Leu Gln Thr Tyr Val Thr Gln Gln Leu Ile Arg Ala Ala Glu Ile
          210          215          220
Arg Ala Ser Ala Asn Leu Ala Ala Thr Lys Met Ser Glu Gly Gly Gly
225          230          235          240
Ser Ser Gly Gly Gly Ser Gly Gly Asp Ile Ser Gly Ile Asn Ala Ser
          245          250          255
Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys
          260          265          270
Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu
          275          280

```

<210> 37

<211> 374

<212> PRT

<213> Artificial Sequence

<220>

<223> chimeric sequence

<400> 37

```

Met Gly Ile Gly Val Thr Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln
 1           5           10           15
Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu
          20           25           30
Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln
          35           40           45
Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Gly Gly Gly
          50           55           60

```

```

Ser Ser Gly Gly Gly Ser Gly Gly Leu Gly Asp Ile Ser Gly Ile Asn
65      70      75      80
Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val
      85      90      95
Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys
      100      105      110
Tyr Glu Gln Tyr Ile Lys Gly Gly Gly Ser Ser Gly Gly Gly Ser Gly
      115      120      125
Gly Gly Ile Gly Val Thr Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln
      130      135      140
Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu
145      150      155      160
Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln
      165      170      175
Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Gly Gly Gly
      180      185      190
Ser Ser Gly Gly Gly Ser Gly Gly Leu Gly Asp Ile Ser Gly Ile Asn
      195      200      205
Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val
      210      215      220
Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys
225      230      235      240
Tyr Glu Gln Tyr Ile Lys Gly Gly Gly Ser Ser Gly Gly Gly Ser Gly
      245      250      255
Gly Gly Ile Gly Val Thr Gln Asn Val Leu Tyr Glu Asn Gln Lys Gln
      260      265      270
Ile Ala Asn Gln Phe Asn Lys Ala Ile Ser Gln Ile Gln Glu Ser Leu
      275      280      285
Thr Thr Thr Ser Thr Ala Leu Gly Lys Leu Gln Asp Val Val Asn Gln
      290      295      300
Asn Ala Gln Ala Leu Asn Thr Leu Val Lys Gln Leu Ser Gly Gly Gly
305      310      315      320
Ser Ser Gly Gly Gly Ser Gly Gly Leu Gly Asp Ile Ser Gly Ile Asn
      325      330      335
Ala Ser Val Val Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val
      340      345      350
Ala Lys Asn Leu Asn Glu Ser Leu Ile Asp Leu Gln Glu Leu Gly Lys
      355      360      365
Tyr Glu Gln Tyr Ile Lys
370

```

<210> 38

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> enhancer region containing tryptophan and / or a tryptophan analog.

<221> MOD_RES

<222> 1, 4

<223> Xaa = independently either tryptophan or a tryptophan analog.

<400> 38

```

Xaa Gln Glu Xaa Glu Gln Lys
1              5

```

<210> 39

<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> enhancer region containg tryptophan and / or a
tryptophan analog.

<221> MOD_RES
<222> 1, 3
<223> Xaa = independently either tryptophan or a
tryptophan analog

<400> 39
Xaa Pro Xaa Tyr Val Xaa Leu
1 5

<210> 40
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> enhancer region containg tryptophan.

<400> 40
Trp Gln Glu Trp Glu Gln Lys Ile
1 5

<210> 41
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> enhancer region containg tryptophan.

<400> 41
Trp Pro Trp Tyr Val Trp Leu
1 5

<210> 42
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> SARS-CoV sequence containg tryptophan and / or a
tryptophan analog.

<221> MOD_RES
<222> 36, 38
<223> Xaa = independently either tryptophan or a
tryptophan analog

<400> 42
Leu Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val Asn Ile Gln Lys
1 5 10 15

Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu Ser Leu
 20 25 30
 Ile Asp Leu Xaa Pro Xaa Tyr Val Xaa Leu
 35 40

<210> 43
 <211> 35
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> derivative of SARS-CoV sequence

<400> 43
 Pro Asp Val Asp Lys Gly Asp Ile Ser Gly Ile Asn Ala Ser Val Val
 1 5 10 15
 Asn Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu
 20 25 30
 Asn Glu Ser
 35

<210> 44
 <211> 35
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> derivative of SARS-CoV sequence

<221> MOD_RES
 <222> 10
 <223> Xaa = Dbu

<400> 44
 Asp Val Asp Leu Gly Glu Ile Ser Gly Xaa Asn Ala Ser Val Val Asn
 1 5 10 15
 Ile Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu Asn
 20 25 30
 Glu Ser Leu
 35

<210> 45
 <211> 35
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> derivative of SARS-CoV sequence

<221> MOD_RES
 <222> 12
 <223> Xaa = Orn

<400> 45
 Val Asp Leu Gly Asp Ile Ser Gly Ile Asn Ala Xaa Val Val Asn Ile
 1 5 10 15
 Gln Lys Glu Ile Asp Arg Leu Asn Glu Val Ala Lys Asn Leu Asn Glu
 20 25 30

Ser Leu Ile
35